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Citrus Production Trend Sharply Upward . . . . .

Larger crops of citrus fruits as more trees come into bearing each year are forecast by the Bureau of Agricultural Economics in its annual outlook reports on oranges, grapefruit and lemons.

The Bureau expects average orange crops of 55,000,000 to 60,000,000 boxes during the next five years, compared with an average of about 54,000,000, in the past five years. Production of Navel and other early varieties probably will not vary greatly from the present level, but the upward trend of Valencas and other late varieties is expected to continue, it was stated.

World production of oranges and mandarins has increased rapidly in recent years, the estimate for the 1936-37 crop totalling 193,000,000 boxes compared with 160,000,000 as the average during the five year period 1926-30. Palestine reported an all-time record crop of around 11,000,000 boxes in 1936-37. Production likewise has increased in Italy, Brazil, Union of South Africa, Japan and Egypt.

The Bureau reported a rapid increase in bearing acreage of grapefruit in recent years, and said that the "trend of production is sharply upward." In forecasting larger crops of grapefruit the report states that only 31 per cent of the bearing trees have reached the age of full production and production from the large number of young trees will increase rapidly in the next 5 years. Much of the expected increase is in the seedless varieties, since bearing trees in this group are two-thirds of the total bearing trees of all grapefruit and represent plantings of which only 15 per cent have reached full production.

"Under the average growing conditions of recent years, it seems certain," the Bureau said, "that the average production of the next five marketing seasons (1937-41) will exceed 25,000,000 boxes, and may approach 30,000,000 boxes. It appears that crops of 30,000,000 boxes or more can be expected with increasing frequency during the next 10 years, whereas in the decade preceding 1936-37, production averaged about 14,700,000 boxes." World production of grapefruit also was reported as increasing.

As for lemons, bearing acreage in California is estimated at approximately 47,000 acres in 1937, of which 34 per cent has not reached full producing capacity. Condition of the 1937-38 crop is low because of freeze damage last winter and production is not likely to be larger than the average of 8,000,000 boxes of the past five seasons. But should average growing conditions prevail during the five years following the 1937-38 season, the present acreage of bearing and nonbearing trees will permit an average annual production of about 10,000,000 boxes.

The Outlook for Oranges for 1938

The upward trend of orange production of the last 10 years probably will continue at a more moderate rate for the next four or five years, the Bureau reports in its annual outlook.

Of the 34,600,000 bearing trees (5 years old and over) estimated in the groves of California, Florida, Texas and Arizona in 1937, 45 per cent had not reached full production and 26 per cent were in the relatively young group of 5 to 10 years of age. With this proportion of the bearing trees yet to come into full bearing it seems reasonably certain that the average production during the next 5 years will be larger than that of the last 5 years. An average for the next 5 year period of 55,000,000 to 60,000,000 boxes seems probable, whereas the average for the last 5 years was 54,044,000 boxes. Production of Navel and other early varieties probably will not vary greatly from the present level; the upward trend of Valencias and other late varieties is expected to continue.

Prices received by growers for oranges have continued on a relatively low level since the season of 1929-30. The unfavorable effects of larger supplies of grapefruit in pros-

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Some Thoughts . . . About The Orange

Rita Hinden writing in Hadar, citrus publication of Palestine, has some pertinent thoughts about the orange which will be appreciated by the orange growers and all lovers of oranges everywhere:

"The orange," says the dictionary, with just a suspicion of dogmatism, "is a large, round or roundish fruit, with a reddish-yellow and leathery rind enclosing ten membranous divisions, each division usually containing two or three seeds in a refreshing sweetish or subacid pulp." True. But what could be more banal, more destructive of the true poetry which clings to oranges? The orange, the pundits of the dictionary remind us, is "technically a berry," insinuating, nothing to get excited about.

The labored accuracy of the dictionary cannot be gainsaid, but there is a strange intoxication about the word "orange" which stirs a chord somewhere in our depths. Is it perhaps the associations which "orange-blossom rouses?" Orange-blossom, worn by brides as a symbol of purity, a cluster of small white flowers framed in green, with the most delicate, yet pungent aroma in the world . Or is it the vision of the ever-green orange tree, bearing its golden fruit, for all the world like a picture of the magic trees of the Garden of Eden? Or perhaps the groves, whose beauty and fragrance are every child's dream of fairyland? Something it is, something special, which sets the orange apart from all other fruits.

Of course the dictionary is always right, but it comes as a blow to our amour-propre to hear orange-peel which in its marmalade form primes every Englishman for his day's work in upbuilding the Empire, described as a "leathery rind," or orange juice, that finest of all drinks, that refuge of vitamins, that curer of disease, as "refreshing sweetish or subacid pulp." Why not at least "sweet" instead of "sweetish"? And why "pulp," than which there are few unpleasanter sounding words? But let us be thankful for small mercies — at least the refreshing capacities are admitted, and that, in the mouth of the dictionary, is indeed high praise.

Despite all this disdain, the orange for centuries past, has been subtly and imperceptibly invading our lives. I speak now not of the orange, qua orange — everyone interested knows by heart the statistics of orange consumption and its marvelous leap to popularity, outdoing even the venerable apple — I speak rather of the things to which the orange has lent its name. the dozen and one ways the word "orange" has penetrated into our households. Orange is, for example, one of the colors of the rainbow, and more important perhaps, the most fashionable color this season, so the papers say. How many hundreds of thousands of woman have the word "orange" perpetually on their lips, and how many more hundreds of thousands who have not bought orange are cursing their fate. But clothes are not everything. Six birds and insects have assimilated "orange" into their names — the orange-bat, the orange-bird, the orange-dove, the orange-moth, the orange-tip, and the orange-dog. Even that most beautiful shell, the cowry, has an orange variety.

Not to be outdone, man has formed a society of Orangemen. The picturesque order, followers of the cult of Orangism, has a noble history. They were originally the Irish adherents of William III, Prince of Orange and King of England, the champion of Protestantism. They are now a secret society, with branches in Ireland, the States and Canada, working to insure the Protestant Succession and supremacy. Every July they proclaim an Orange Day, and march forth, orange bands round their shoulders, orange flags flying. Their opponents, the Greens, hate the orange. When they see orange they see red. The appearance of the Orangemen only this year was sufficient to cause rioting and loss of life in Belfast. So potent is the effect of the orange.

More important still than men, a whole principality is called Orange, with a noble lineage of princes and kings. Could one conceive of a Prince of Apple, or a Prince of Banana? Of course not, but a Prince of Orange figures prominently in every child's history book! As if to prove the aristocracy of the orange over other fruits, heraldry too has its orange—a round shield-like design. I should not be surprised if orange one day supplanted the kingly purple — only there may not then be kings to wear it.

Why is it that the orange has so gripped the imagination of mankind? There are other fruits, equally tasty and far easier to eat. There is a beauty in a cluster of grapes, in the bloom of a peach, with which the orange cannot hope to compete. To me the answer is simple. All other fruits appeal to only one side of our nature — either the aesthetic, the utilitarian, or the epicurean. But the orange has the supreme quality of appealing to all three of these. Effective to gaze upon, effective to eat, and effective in bringing balm to the ailing — perhaps there is something in our make-up to which this mixture of all the virtues appeals! Perhaps as in the past the lion has gained renown for its strength, the fox for its cunning, and the peach for its complexion — so in the future the orange will stand for that rarest of all combinations — the union of the good with the beautiful.

Just now, when our land is flowing with oranges and grapefruit, and the earnest of prosaic questions of planting and plucking and picking and packing are exercising all but the most trival minds, I feel I must apologize for these idle reflections. But an orange, after all, is not merely an orange. It is, as I have tried to show, an institution.

There are few migratory birds which fly higher than 3,000 feet and one that flies as high as 5,000 feet is exceptional, according to the U. S. Bureau of Biological Survey.

Within the past quarter of a century more than 7,000,000 rural boys and girls have taken part in 4-H club work.

Palestine Growers Study Stem End Rot

All citrus growers are familiar with the deleterious effects of stem end rot, which has caused heavy losses to growers in all citrus sections. Here in Florida much study has been devoted to this subject and many papers have been written by authorities who have made a special study of the subject. That experts in other citrus fields have been giving careful thought and investigation to the matter is evidenced by recent publication of the findings of two leading plant pathologists of Palestine, I. Richert and F. Littauer.

The popular Jaffa orange of Palestine has been peculiarly susceptible to stem end rot and mould and the publication of the results of their findings by these acknowledged experts in their field may shed new light on the matter which may be of benefit to growers in all citrus sections.

A basic consideration in their experiments with thousands of fruits was that the chief channel of infection by oranges by both stem-end rot and blue mould is through the stem end. The latter therefore received concentrated attention in the endeavor to develop effective control of the diseases and the investigators at last devised a treatment which they have found to be successful. Stated in its simplest terms, this treatment consists merely of dropping a disinfecting solution on the stem end of each fruit before it is wrapped and packed for shipment.

Out of numerous solutions tried, three were found to have much value. These are (1) a 5% borax solution; (2) a 1% iodine solution consisting of 13 gr. iodine, 200cc water and 800 cc alcohol; (3) a 10% iodine solution dissolved in alcohol.

An account of the experiments appeared in the July-August issue of Hadar, the able citrus magazine published in the city of Tel-aviv, Palestine. It is stated that both of the iodine solutions proved effective in reducing stem-end rot. The effect of borax on the latter was not as marked as that of iodine, but it showed disinfectant power and it may be supposed that its effect could be increased by using a heated solution, which would also allow a higher concentration of borax.

The latter, while not as useful as iodine for stem-end rot, proved highly effective for mould. It entirely controlled mould decay in fruit stored for four weeks. In fruit stored for seven weeks it reduced the mould from 13.5% to 2.3%. An interesting result of the experiments, intended mainly to attain control of stem-end rot, was the discovery that the treatment of the stem-end also provides control of mould, which infection occurs chiefly through the stem-end.

The authors' summary of the conclusions from the experiments is in part as follows:

A new method was found to control wastage caused by Diplodia Stem End Rot and Penicillium Mould by treating only the stem-end by dropping on it one drop of a disinfectant solution by means of a pipette.

A 1% solution consisting of 13 gr. iodine, 10 grams of potassium iodine, 200 c. c. water, and 800 c. c. of alcohol gave the best results. It reduced Diplodia Stem-End Rot in innoculated fruit stored for four weeks from 52% to 14.5% in 1936. In the second year's experiment with non-innoculated fruit it reduced Diplodia Stem-End Rot from 2.3% to 0.7% and Penicillium Mould from 8.7% to 0.4%, and the total amount of rot from 11¼ to 1.1%.

The second best effect in controlling wastage was shown by Borax. It gave excellent results in controlling Penicillium Mould. It reduced this rot in 1937 from 87% to nothing. In the controlling of stem-end rot it was less effective. In 1936 it reduced Diplodia from 52% to 29.5% after four weeks.

The other iodine solution, which consisted of a 10% alcoholic iodine solution, gave contradicting results; in experiments of 1936 it reduced stem-end rot in fruits stored for four weeks from 52% to 15.5% and in the experiments of 1937 it had no effect. This year it showed a disinfectant effect upon Penicillium Mould, reducing it from 8.7% to 3.5%.

The treatment is applied by means of a capillary pipette filled with the dininfectant solution. It is closed at the top and is held upright by means

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Citrus Men Dine At Zellwood

The Lodge at Zellwood was the scene of a dinner and evening gathering of citrus and business men on November 9, as the guests of W. B. Goding of Apopka and the Florida Insecticide Company of that city. In addition to the invited guests, the participants included personnel of that company and of the sales organization of the Nitrate Agencies Co. The occasion featured the announcement that the products of the Apopka concern now will be sold to the growers thru the widely flung forces of Nitrate Agencies Co

The Lodge, which is Richard Whitney's place of winter residence in Zellwood, was thrown open for the occasion, he being one of the principals in the Apopka concern.

Following the dinner several talks were made, among them Walter H. Klee of Jacksonville, W. B. Goding of Apopka, Hugh Akerman of Orlando, and Thos. B. Wheaton and M. L. Lee of Apopka. Mr. Lee's talk dealt with the history of the Apopka business concern from its origin in 1916 down to date, during practically all of which period he has been plant manager in charge of manufacturing.

Among those present were: Edward F. Bell, Leesburg; A. M. Kirkpatrick, West Palm Beach; Geo. W. Anderson, Bartow; J. A. Simmons, Bradenton; R. O. Bell, Green Cove Springs; O. C. Minton, Vero Beach; Ben Hill Griffin, Jr., Frostproof; W. O. Jelks, Delray Beach; R. C. Simms, Orlando; Walter H. Klee, Jacksonville; W. B. Goding, Thom. B. Wheaton, M. L. Lee, A. W. Haygood, Gillian McClure, Apopka; R. T. Rawlings, H. Mayfield, Hugh Akerman, W. Y. Akerman, Orlando; Frank Kay Anderson, Altamonte Springs.

CITRUS PRODUCTION TREND SHARPLY UPWARD

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pect for the next five years and prospective apple supplies, only slightly smaller than in recent years, probably will be offset to some extent by an improvement in consumer purchasing power. Disposal of larger quantities in foreign markets holds little promise because of an increasing production in other countries, especially in Palestine.

Plantings Have Increased

According to the U. S. Census enumerations, the number of orange trees doubled between 1920 and 1935, total trees of all ages in groves in 1935 amounting to 38,921,000 compared with 19,663,000 in 1920. The number of bearing trees during this period rose from about 14,438,000 in 1920 to 33,115,000 in 1935. The greatest increases in bearing trees apparently occurred in the 5 year periods of 1920-25 and 1930-35. The number of nonbearing trees declined after 1925, and in 1935 comprised only 15 percent of the total trees compared with 28 per cent in 1925.

Trend of Domestic Production Upward

During the 18 seasons from 1919-20 to 1936-37, inclusive, production of oranges increased from the average of 30,121,000 boxes for the first 5 years of this period to the average of 54,044,000 boxes for the last 5 years. The trend of production during this period has been definitely upward for both California and Florida, although the Florida crop has increased at a somewhat faster rate.

With reference to the future trend of orange production, data collected in recent surveys indicate a total of about 34,600,000 bearing trees (5 years old and over) in the principal producing states of California, Florida, Texas and Arizona, as of July 1, 1937. Of this total, about one-fourth is in that stage at which production increases very rapidly, from 5 to 10 years old, and about one-fifth is 11 to 15 years old and is only approaching full production. A rising trend of production is therefore indicated for a number of years, even though no further new plantings are made.

Navel and miscellaneous varieties, which are classed as early oranges, represent about 47 per cent of the total bearing trees of all varieties, and in general, are older. About three-fifths of the bearing trees of early varieties are near the full bearing age. The trend of production of early oranges probably will continue upward in Florida, Texas and Arizona, but will remain stationary in California. The plantings of Valencia and other late oranges have been heavy in recent years and the average age is younger than for the early varities. Since more than half of the bearing trees of the late varieties have not reached the age of full-bearing capacity, production of Valencias and other late oranges evidently will increase strongly during the next 5 years.

World Production Increasing

World production of oranges and mandarins has increased rapidly during the last 5 years. Estimates for the 1936-37 crop total 193,000,000 boxes as compared with the 5 year average, 1926-27 to 1930-31 of 160,000,000 boxes. Palestine has shown the most significant rise in production with an all-time record crop of around 11,000,000 boxes in 1936-37 compared with the 5 year average, 1926-37 to 1930-31, of 2,860,000 boxes. Noticeabe increases have occurred in Italy, Brazil, Union of South Africa, Japan, Egypt and the United States. Spain, second largest producer of oranges and mandarins, shows a slight decline in the 5 years, 1931-32 to 1935-36 compared with the average for the 5 previous seasons, but the estimated crop for 1936-37 was the largest since 1931-32. World orange production and exports will probably continue to increase for several years.

No Marked Trend in Orange Exports from the United States

Exports of oranges from the United States are not likely to show much increase during the next five years because of increasing competition. But in years of large crops of California Valencia oranges, exports to Europe during the summer months will probably show sharp increases, only if orange crops in competing countries are small in the same years.

Canada is the principal foreign market for California oranges. The United Kingdom is the second most important outlet, but practically all the exports to that country occur during the summer season, May to October.

Exports of oranges in the 10-month period, November to August 1936-37, amounted to 2,279,000 boxes compared with 3,877,000 boxes in the same period of 1935-36. Exports of oranges in the 1934-35 season amounted to 5,425,000 boxes. Exports in 1937-38 are likely to exceed the small orange exports of 1936-37.

Prices to Growers Low

An upward trend in orange production and a substantial increase in grapefruit production are anticipated for the next 5 years, but an increase in consumer income may result in an increased demand for oranges sufficient to prevent prices lower than during the past few years. Reductions in costs of marketing, transportation, and culture have proved a definite benefit to growers in offsetting the depressing influence of expanding production on returns, and it is not unlikely that growers will seek to effect further economies in these directions. From the 1933-34 season to date, the organization called the California-Arizona Orange Industry has regulated shipments under a federal marketing agreement program for the purpose of maintaining and improving grower returns. Industries in other states have also employed these measures from tme to time. Further efforts in this field could be expected to assist growers in marketing their products to better advantage.

The Outlook for Grapefruit for 1938

Bearing acreage of grapefruit has increased rapidly during recent years and the trend of production is

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IMPRESSIONS

..By..
Frank Kay Anderson

And Bayless W. Haynes, the w. k. president of Wilson & Toomer, and President John J. Tigert of the University of Florida were roommates at Vanderbilt University in their younger days.

There are some things difficult, or impossible, to live down.

Mention of Wilson & Toomer reminds that not long ago we met Bayard F. Floyd, the vice-president of that organization, on the main drag in Orlando. We paused to talk briefly, and the conversation just naturally extended itself until it had dragged out considerably. We made a move to close the chapter and move on, feeling that we were detaining Bayard Floyd unduly. But something we had just said had gotten his interest. We couldn't leave him talking, so we unobtrusively backed around and got a lamp post behind our back and leaned thereon restfully. The conversation continued to flourish. Then it lagged a bit; but we were asked a question and it got new impetus. Bayard Floyd's manner began to puzzle, maybe worry, us a bit. Never saw a man so thoroughly unhurried. It wasn't just his usual poise, but seemed to partake of something like complete inertia. Finally everything cleared up. Looking up rather wearily, Bayard Floyd said: "Well, I suppose I'd better get along. I've an appointment with a dentist, and I'm about ten or fifteen minutes late."

"L. Maxcy Inc. invades Taxes," so the inspired linotyper and the one-eyed proofreader of this publication caused us to say in last month's issue. Now the word properly was "invades" and not "evades," so it rather follows that the "taxes" was intended as a geographic reference to what Queen Victoria used to call the Lone Star State. Texas in itself is a pretty big subject. Taxes constitute too big a subject for this column to tackle.

Though we will say that Miss Frances Perkins' (nee Mrs. Somebody Wilson) suggestion for balancing the budget, in the current play I'd Rather Be Right, by laying some real heavy taxes on postoffices and other federal buildings, does appeal to us in point of its eminent practicality.

It is funny to think that precisely the same letters in differing combinations constitute words of such diverse meanings as Texas and taxes. However, we must continue to regard the word marital as the most dangerous word in our language. In long years of experience both in the big time and the bush leagues we have seldom seen it get past the linotypes and the proof-room in its intended form. Almost invariably, especially so when used in connection with weddings, it emerges as "martial," while the latter word frequently suffers from the reverse transposition. As when we once read how Napoleon had awakened, "the marital ardor of France."

Can't help wondering how that foregoing paragraph will look in its final printed form. It may turn out all right, just to fool us.

Phil W. Roberts of Mims stops to say that he wishes to be enrolled as one among that vast horde who regularly read these Impressions, and like them. Now that is mighty nice. We have long been impressed with that w. k. East Coast grower's perspicacity, if not to say altitudinocity.

W. W. (Pete) Yothers, the celebrated bugologist and antiphlogistinist of Orlando, has a blue shirt. And what a blue shirt! What a shirt; and what a blue! However, he says he has about decided to lay it aside and wear it no more, because Joshua C. Chase, whenever he sees it breaks out vocally with merriment.

Our heart goes out to Pete Yothers in his predicament. Justly proud of this bit of raiment which so distinguishes his manly figger, he is going to be compelled to forego the adornment it furnishes all because of the uninhibited risibilities of one who calls himself a friend. We, too, have suffered somewhat similarly. As, for instance, that beautiful pair of checked pants — cancel pants and substitute trousers because they cost over six dollars—of ours, which we have not worn so much in the past year. We are proud of those trousers, not only for their scenic effect, but for their graceful draping modification of that pair of parentheses which pass with us as our hind legs. Yet we cannot wear them because of their devastating effect upon Lawrence Gentile. He has only to see them and he begins to gyrate slightly, emitting firstly a chuckle that grows into a choking fit, his face reddening and then purpling until we become apprehensive of high blood pressure. So we have laid these treasured trousers aside, and seldom wear them, except when we are on one of our Asiatic trips.

It is our considered conclusion that there is a lot of petty jealousy in this world.

Riding over that 36,000 acres in northwest Orange County belonging to Richard Whitney, adjacent to his groves and the peat-humus plant. Most interesting the black Aberdeen Angus cattle recently stocked there, and doing well. Beautiful, if ever we saw beautiful cattle. The transition from upper New York State to this tick-free pasturage apparentiy didn't cause them to lose even one chew of the cud. And looking over the calf crop of the ordinary range cows sharing this pasture, we incline to the belief that an Aberdeen Angus cow's husband fundamentally is something of a philanderer.

A few years back we wrote of the unusual steps taken to protect the quail, wild turkey and other game on this tract; and how best results had followed a campaign of poisoning gopher holes with cyanide, to the great mortality of snakes, skunks and other uninvited guests of the unoffending gophers. In getting about

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NEW MARKETING AGREEMENT PROPOSED

A new marketing agreement having the endorsement of shippers handling what is said to be more than fifty-six percent of the Florida citrus crop and backed by the committee of eleven, representing the citrus growers of the state, has been prepared and is being submitted to the federal department of agriculture together with a petition asking for its adoption.

In the new agreement, submitted and approved at a meeting of growers and shippers in Lakeland on November 24, effort has been made to reconcile the differences existing between two previous agreements, one submitted on behalf of the growers and the other by the shippers of the state.

The fact that the new proposed agreement has the apparent endorsement of growers and of the majority of the shippers of the state would seem to indicate that a genuine effort is being made to harmonize the differences between factions of the industry which have heretofore found it impossible to agree on the basis and method of control.

Before the proposed agreement can be approved by the federal department of agriculture and put into effect, public hearings must be held and the agreement signed by two-thirds of the growers of the state and by shippers handling at least one-half of the crop.

If and when this hearing is had, it is to be presumed that a full discussion of the provisions of the proposed agreement will be had, the good features emphasized and the bad features, if any, brought to the surface.

In making the final decision on the petition and in approval or disapproval of the proposed agreement, the federal department of agriculture should, and doubtless will, be actuated by the effect which the agreement may be expected to have on the interests of the grower.

At any rate, the Lakeland meeting has set on foot a movement which should bring about a better understanding of the needs of the citrus growers of the state, and which it is to be hoped will result in benefit to the growers through the solution of one phase at least of their marketing problems.

KEEP POLITICS OUT

It is to be hoped that charges made at a recent meeting of the Florida citrus commission that Governor Cone is trying to make a "political football" of the commission may prove to be groundless, and that the threat of an open break between the Governor and the commission may be averted.

The Florida citrus commission last year did much to benefit the industry. The harmonious action and spirit of co-operation which pervaded the early meetings of the reorganized commission held promise that the commission this year might prove of even greater value to the industry.

But if this result is to be achieved, there must be continued harmonious action and co-operation, not only among the members of the commission themselves, but between the commission and the Governor.

There has been too much "politics" in the citrus industry of Florida in the years that are past. There is no room for "politics" in the organization or the operation of the Florida citrus commission—a body created and constituted for the sole purpose of benefitting the citrus growers of the state.

MARKET CONTROL NOT ALL

Marketing control of citrus shipments from Florida is a major problem of the citrus grower—but it is not by any means his sole problem. Reference to sales reports on any auction market in the land on any day during the shipping season provides ample proof of this assertion.

On Monday, November 22, highest prices quoted on the New York market for best grade Florida oranges stood at the figure of $5.05 per standard box. On the same day at the same market other Florida oranges sold as low as $1.70 per box, a premium of $3.35 per box for the high grade fruit. Proportional price ranges were noted at other auction markets. The average price on the New York market on the same day was $2.73. Thus it will be seen that the grower of the highest grade fruit received almost treble the price of the lowest grade and a premium of $2.32 over the average price paid for all fruit on the New York market on that day. Better quality and better appearance accounts for the difference in price.

This is not a new situation nor an isolated case. The same condition has existed year after year. Finest fruit always brings the grower a profit; poor fruit seldom brings adequate returns. The lesson is that we should not only endeavor to control distribution, but that we should, first of all, devote our energies to the production of fruit of finest quality and appearance — and that we should keep our culls at home. Better to use them as fertilizer than to ship them to market to help drag down the price of the better and medium grades.

Some Examples Of Plant Breeding In Florida

BY P. H. SENN
Associate Professor of Farm Crops and Genetics, College of Agriculture, University of Florida
Gainesville

We will not attempt to give a complete list of plants developed through plant breeding in Florida, but I will present a representative list from certain groups of plants that will indicate some of the contributions the science of plant breeding has made toward the improvement of the economic plants of our State.

Plant breeding refers to the improvement of plants through two general methods, one of which is hybridization, the other selection. The modern plant breeder uses both of these methods. Hybridization involves the crossing of plants that differ in certain characteristics. The breeder hopes that by hybridizing desirable characteristics of two or more plants might be brought together in one plant. This method holds forth great possibilities for improvement.

Hybrids are often very unstable; that is, they tend to break or split up into various forms and types, some of which might be desirable, others less so. Here is where selection is practiced. It is the picking out of certain of these types that are desirable, and growing them in the hope that they might be more stable and later become a new variety.

Let us conisider some of the contributions of plant breeding among the citrus fruits of Florida.

The variety of Orange known as Lue Gim Gong is the product of the labors of a plant breeder of the same name. Lue Gim Gong was a plant breeder and horticulturist, a native of China, who lived near DeLand, Florida. He crossed two varieties of orange, one the Hart's Late, now known as Valencia, the other variety known as Mediterranean Sweet. He used hand pollination methods and his work was done in 1886. Through the producton of the Lue Gim Gong variety of orange, we have one of our very latest varieties, with the characteristic of hanging on the tree even from one season to the next, thereby extending our market season late into the summer.

The Temple Orange is another variety of outstanding importance in our State. It originated at Winter Park, Florida and was produced by hybridization..

Other contributions made by plant breedng in the field of citrus have been products of hybridizing different types of citrus fruits. The Limequat has been produced by crossing the lime with the kumquat. An outstanding variety is the Eustis. It resembles the lime parent in habit of producing its crop in that it blooms several times throughout the year, thereby extending its season of production. Its foliage, however, resembles the kumquat parent.

The Perrine Lemon which is now being planted rather extensively in areas around Babson Park, Florida, originated as a cross between the Mexican Lime and the lemon. The Perrine Lemon is a promising product. It has good quality and is well suited to Florida conditions.

The Citrange has been produced through the hybridization of the Round Orange with the common or ordinary trifoliata. Out of such hybridizations have come such well known varieties of Citrange as Rusk and Morton as well as a number of other varieties. The varieties differ in many respects. Some have the evergreen foliage like the round orange parent, while others have the foliage of the trifoliata parent. The fruits show little resemblance to either parent.

The Citrange has been used in further hybridization work. It has been crossed with the kumquat. From this has come the **Citrange-quat.** The Thomasville, Sinton and Telfair are well known varieties of Citrange-quat, some of which are very hardy.

The Tangelo fruit has resulted from crossing the Grapefruit with the Tangerine. Out of this have come such varieties as Thornton, Sampson and others, varying in size, color and general qualities.

The breeding work with **watermelons** will serve as an example among the **truck crops.** As is well known, watermelons of practically all varieties of commercial importance are susceptible to a disease known as wilt. During the last few years intensive breeding and testing have been carried on with the watermelon by the Florida Experiment Station in an effort to overcome this trouble. Out of the commercial variety known as **Kleckley Sweet** has been developed, by breeding methods, a melon that is highly resistant to the wilt organism. At the same time the market requirements have not been overlooked. The flesh is of uniform quality and color, and the shape of the melon is that desired by the shippers.

Some interestng contributions have been made to our list of varieties of field crops, through the efforts of the plant breeder. Some years ago the **tobacco** industry in north and northwest Florida was threatened by a disease known as tobacco wilt. Breeding work was undertaken at the North Florida Experiment Station at Quincy, which is the center of one of the tobacco producing areas of the State. Two varieties, one known as **Big Cuba,** the other as **Little Cuba,** were crossed, and out of this cross has come the variety known as Number 301. This variety is now grown extensively in the tobacco fields of Florida. Not only does it possess the characteristic of being highly resistant to the disease but the size, shape and quality of the leaf have met the market demands in a very admirable manner.

A number of years ago the **velvet bean** was introduced into Floirda. At first it was used only for shade, growing around porches. Later it was tried in the fields and found to be desirable as a forage and as a soil-improving crop. Breeding work was undertaken by one of the Experiment Station plant breeders. Out of the crosses made have come a number of different varieties, different in many ways, such as time of maturity, size, color and shape of seed, and habit of growth.

A new variety of **Cowpea** has been developed by the Experiment Station breeding staff. This new plant

has been named **Suwannee cowpea.** This new variety possesses characteristics of growth and production, as well as disease-resistant qualities, that place it in the forefront as a variety for growing in the state of Florida.

Considerable plant breeding work is being done at the present time with corn in Florida. The Florida Experiment Station has recently developed and released two new varieties of sweet corn. One of these newly developed varieties is named **Suwannee Sugar.** It is the result of crossing the **Long Island Beauty Sweet corn** with a commonly grown roasting ear variety known as **Snowflake.** The new variety possesses a very desirable ear size, the plant is vigorous, it yields well and it shows a high degree of resistance to the corn ear worm. This new variety of sweet corn holds much promise as a trucking corn for shipping purposes.

Another sweet corn is known as Florida 191, a sweet corn developed by breeding. This is a variety suitable for home garden use.

Sugar Cane breeding is carried on in Florida in the Everglades area. Here the plant blooms and hybridization methods may be practiced. Thousands of crosses have been made in an effort to bring about improvement of sugar cane varieties. Already sugar canes have been produced and are now being given the final test before being released to the growers. Some have been developed that show a high percentage of sugar in the juice. These will be found excellent for sugar production. Others are being developed for syrup purposes. Some of the varieties produced have a tender stalk with tasty juice and will probably be popular as a cane for chewing. There are still other varieties that are giving promise as suitable forage plants for feeding livestock.

The examples taken from the various types of economic plants constitute, by no means, a complete list of the accomplishments of the plant breeders of Florida. They do show, however, some of the accomplishments during the past years and indicate the vast opportunities and possibilities of producing other new plants that will better meet the needs of our people of today and those of future generations.

Erosion occurs wherever land has sufficient slope for rain water to flow over an unprotected surface.

Copper -- A Trace Element

BY DR. R. V. ELLISON
HEAD OF CHEMISTRY AND SOILS DEPT. FLORIDA EXPERIMENT STATION

On September 13th it was my pleasure to talk in a general way regarding the growing importance, from a number of standpoints, of trace elements in Florida agriculture. Now I should like to discuss in rather fuller detail the element copper as one of the most important members of this group.

That elemental copper difficulty definitely has become an established factor in our agricultural program is indicated by the estimate that between fifteen hundred and two thousand tons of copper sulfate or bluestone are used annually in our state for agricultural purposes in one way or another. While this includes a considerable amount that is applied to plants in the form of dusts or sprays, and even as animal supplements, it must be remembered that most of this ultimately reaches the soil, frequently as we now know, with great benefit to plant growth. As a matter of fact, it was through the action of such residues from sprays passing into the soil that the active need for copper in the normal metabolism of numerous plants was first observed. It has been known for a number of years, however, that copper bearing sprays when applied to the foliage of certain plants, have exerted a peculiarly stimulating effect on plant growth over and above that provided by the control of the disease for which they were applied.

Dieback of Citrus

Without doubt the first important plant response to copper established in Florida was the curative effect of the element on the disease known as "Dieback" of citrus. Early positive observations in this connection were made by Floyd in 1923 when he reported that Bordeaux spray appeared to be effective in the control of the disease. This was followed by soil treatments with bluestone by Grossenbacher who reported favorable results in 1916 as did also Floyd, as a result of more extensive trials, in 1917. These soil treatments appear to be the first to identify the benefits observed with the element copper. They are still recommended when any of the multiple symptoms of the disease on citrus trees appear, including stained and dying terminal branches frequently showing peculiar s-shaped growth, multiple buds, the ammoniation of the fruit, etc.

The Citrus Experiment Station recommends ¼ to 1 pound of bluestone per tree as a soil application, the amount depending upon the size of the tree and the character of the soil. It is especially emphasized that too heavy applications on thin, acid soils may produce serious damage in contrast with soils containing reasonable amounts of organic matter and/or lime where there is much less danger of direct toxicity due to the so-called "buffering" effect of these components. In this same connection the finely granular form is not recommended for use in direct application to the soil especially on the thinner types since it will go into solution much more rapidly and so the more quickly produce injury. In this connection it might be said that soil treatment is much to be preferred over the application of sprays and dusts on the foliage unless these are necessary for other reasons. Leaf treatments of this nature are consistently avoided whereever possible because of the favorable relationships for a number of insects that are said to be established by them.

Reclamation of Raw, Organic Soils

A further important use of copper in the agricultural development of the State has been found in supplying what apparently is a very definite plant need on newly broken organic soils. Its effectiveness in this connection was first established in the Everglades where it has proved of inestimable value in developing the raw peat soils of this great area and bringing them into normal production of all agricultural plants that formerly failed completely without such treatment. Several thousands of tons of bluestone already have been applied to the soils of the Everglades and common use is also being made of the treatment on other muck soil areas such as that found at Fellsmere, at Lake Istokpoga, along the Oklawaha river and others.

In the handling of muck soils where this element is needed the practice has been developed to include copper sulfate in the fertilizer mixture to the extent that in the first application between fifty and seventy-five pounds per acre will be applied and about half that amount for the second. Many are following the practice of including five or ten pounds per acre after the first two years for a number of seasons just to take care of any irregularities that may develop such as a greater depth of plowing that may turn up a mass of untreated soil, fluctuating water tables, etc.

With regard to the manner of treatment it is usually applied in or near the line of planting. Where the original breaking of an area is planned six months to a year in advance, the bluestones can be applied broadcast with good results at practically the same rate and worked into the entire soil body in this way. The carry over, or residual effect of copper on muck soils has been found to be very good, indicating that it is absorbed and held very firmly against leaching by the soil body but not bound so closely that it is made unavailable to the plant.

While we do not know just what the role of copper is in various growth or the benefit it confers, whether to citrus exhibiting the various symptoms of dieback or any one of the great variety of plants failing completely on newly broken organic soils, its effect is as definite as it is indispensible. Without doubt there are thousands upon thousands of acres of a wide diversity of soils in the State that would benefit from proper treatment with this element for it should be remembered that the really proper time for treatment or fertilization of plants, whether in this or any other connection, is not only before characteristic deficiency symptoms become striking but before they appear at all.

For further detail on these two main lines of treatment, insofar as the use of copper as a plant growth stimulant is concerned, I would suggest that you write to the Citrus Experiment Station at Lake Alfred, regarding your questions in connection with dieback of citrus, and to

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Visit Our Nurseries at Dundee, Florida

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IMPRESSIONS

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over the tract today, it is customary to fasten a sort of wire cowcatcher to the bumpers of the car, in order to avoid running over the wild turkeys, some of the gobblers being inclined to dispute the road with a motor car. Also it is customary to carry pocket combs, in order to keep the quail combed out of one's back hair. Any wonder we had concerning the safety of these wild guests from vandal humans, you know, the sort of fellows who live in Apopka, Orlando and Winter Park, was dissipated by the quickly manifested appearance of the woods riders whose job it is to dry-nurse them. When time hangs heavy on the woods riders' hands, they amuse themselves by putting in cute little five-acre patches of peas and other things at scattered spots in the woods to the end that their feathered friends may have something with which to delight their little tape worms.

W. B. (Bill) Goding, Richard Whitney's right bower in Florida, one of the activating principals in the Florida Peat Humus Co., the Florida Insecticide Co., the State Bank of Apopka — a favorite playground of the Hugh Gant-Alvin Hunt wealth redistributing syndicate— and the Young Men's Marching Club of Zellwood, acted as our mentor and guide in this trip over the Whitney tract. As previously recorded, Bill Goding is in prime condition these days. The sight of him will be warranted to make any seasoned farm smoke-house operator's mouth water, come cold weather.

So when we got a wire from him a few days later to be sure to meet him at 6:30 p. m. next day at the Lodge in Zellwood, Richard Whitney's place of winter residence in Florida, we didn't look forward to missing a meal though nothing was said in the telegram on that subject. We dutifully went along, taking only the precaution of going without lunch at noontime. It was well we did.

When we got inside the Lodge and saw the numerical strength of the gathering we began to have doubts of the wisdom of having missed lunch. Profiting by our early experience in professional football, we got up to the bar; but the outlook seem-

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ARMOUR FERTILIZER WORKS

Jacksonville, Florida

CITRUS PRODUCTION TREND SHARPLY UPWARD

(Continued from page 8)

sharply upward. Last season when growing conditions were only slightly above average, a record-high crop of 30,281,000 boxes was produced, which is 80 per cent above the average production of 16,869,000 boxes during the previous 5 years. Since only 31 percent of the bearing trees had reached the age of full production in 1937, the Bureau says that the trend of production during the next decade is likely to continue upward because of the increasing bearing capacity of the large number of relatively young trees.

Much of the expected increase in production will take place in the seedless varieties of grapefruit. Bearing trees in this group are two-thirds of the total bearing trees of all grapefruit and represent plantings of which only 15 per cent have reached full production. The seedless varieties predominate in Texas, California and Arizona.

Under the average growing conditions of recent years, and in the light of recent production trends and potential increases in bearing surface of young trees, it seems certain that the average production of the next 5 marketing seasons will exceed 25,000,000 boxes, and may approach 30,000,000 boxes. It appears that crops of 30,000,000 boxes or more can be expected with increasing frequency during the next 10 years, whereas in the decade preceding 1936-37, the production averaged 14,700,000 boxes and in only one season 1934-35 reached 20,000,000 boxes. As large crops in recent years have resulted in low prices to growers, the problem of operating groves at a profit will become more acute as production increases. Production in foreign countries is also increasing and exports will meet with greater competition.

Trend of Domestic Production Sharply Upward

The trend in grapefruit production has been closely associated with the trend in the number of bearing trees. According to United States Census enumerations, there were 10,079,000 bearing trees in groves in 1935, compared with 3,473,000 in 1925, and 1,937,000 in 1920. The number of bearing trees in 1935 was three times the number in 1925 and five times the number in 1920. Production from the bloom of 1936 (1 year after the 1935 census) was 3½ times larger than production in 1925-26, and 4½ times larger than the crop of 1920-21. Production during the next five years, however, probably will be influenced to a greater extent by the development of young trees already in bearing. Nonbearing trees reached a peak of 4,127,000 in 1930 and declined to 3,079,000 in 1935.

An analysis of surveys conducted in California, Florida, Texas and Arizona during recent years indicates a total of 12,777,000 bearing trees (5 years old and over) in groves as of July 1937. Of this total, 69 per cent were from 5 to 15 years of age and had not reached full production; 31 per cent were 16 years and over, or at an age approximating full production. It is significant that 50 per cent of the bearing trees are 5 to 10 years of age. This means that as this large proportion of young trees increases in producing capacity it seems inevitable that production will mount to successively higher levels.

Material increases are to be expected in Texas, Arizona, and California where the trees now in full production amount to only 4, 5 and 29 per cent respectively, of total bearing trees. Production in Texas jumped in 1936-37 from a previous high of 2,762,000 boxes in 1935-36 to 9,231,000 boxes in 1936-37, and with 76 per cent of bearing trees falling in the 5 to 10 year old group, future production probably will increase very rapidly. Texas now has nearly as many bearing trees as Florida, having increased from only 5,500 in 1920 to 4,913,000 in 1937. Florida production of 18,100,000 boxes in 1936-37 was also a record crop. In Florida, however, only 21 per cent of the bearing trees are in the 5 to 10 year old group and 61 per cent are near the age of full production; hence, the upward trend in production in this state will not be so pronounced as in other states.

The exact trend of total grapefruit production is difficult to forecast because it is not possible to foresee unusual growing hazards, such as hurricanes and freezes, to which the crops may be subjected. But assuming the average growing conditions of recent years, and allowing for the potential increase in bearing surface of young trees, the present bearing acreage would permia an average production during the next 5 years of approximately 30,000,000 boxes.

Neglect and abandonment of unprofitable groves is a possible modifying factor in the future trend of production. Removals made in Texas during the last 2 or 3 years amounted to more than 800,000 trees. These removals, however, consisted largely of trees damaged by the hurricane of 1933, or of trees in unfavorable locations. The weather in Texas has been favorable during the last 2 years and groves that survived the 1933 hurricane have practically recuperated from the damage of that year. In Florida the freeze of December 1934 caused considerable loss of nonbearing trees but no material loss of bearing trees. At present, the majority of grapefruit groves are well cared for in various states and current tree removals are few.

World Production Increasing

World production of grapefruit has increased rapidly in the last 4 seasons. The crop of 35,000,000 boxes of last season was an all time record, more than double the 1926-27 to 1930-31 average of 15,000,000 boxes. The chief increase in production was in the United States which produces around 80 per cent of the world total. Palestine has become the second most important producer with the record harvest of 2,000,000 boxes last season compared with the 1926-27 to 1930-31 average of 22,000 boxes. Puerto Rico which was second to the United States during the 1926-27 to 1930-31 period has

shown a rapid decline, last year's crop amounting to little more than half the average of 1,100,000 boxes produced in the earlier period. The Union of South Africa and Brazil are minor producers of grapefruit but have increased production and exports substantially during the last few years.

(Concluded Next Issue)

INSECT PESTS IN NUMBERS THREATEN FOR NEXT YEAR

Insect pests are ending their season with serious threat or large numbers next year in many places according to the Insect Pest Survey Bulletin of the U. S. Department of Agriculture.

Grasshopper eggs in the large numbers expected are revealed by surveys in most of the states where hopper outbreaks were heavy last summer. Because of warm weather, egg laying has been somewhat protracted in the southern part of the grasshopper-ridden area.

Morman cricket eggs are numerous in the northern part of Nevada, where the egg survey has been completed, but less so southward in Montana. Apparently the crickets have spread from focal points scattered over much of the state

The hessian fly has been found in some early seeded wheat in Missouri and in southeastern Kansas.

The chinch bug took advantage of the dry, warm fall weather to enter hibernation in tremendous numbers.

The velvet bean caterpillar, which feeds on soybeans, cowpeas, peanuts, etc., recently has been very numerous and destructive in Florida. It is at work also in Louisiana.

The apple maggot showed up in unexpectedly large numbers for the first time in 10 years in an orchard in central West Virginia.

Unusually large numbers of the grape berry moth occurred along Lake Erie in Ohio and in southwestern Michigan.

The walnut husk fly has extended its infestation somewhat to the west, having been found in Orange county, Cal.

The California red scale is injuring severely citrus trees in the southern tip of Texas. It is also abundant in Los Angeles county, California.

The vegetable weevil, which had temporarily suspended operations in the Gulf states, is attacking truck crops there.

The northern mole cricket has been seriously damaging potato tubers in Massachusetts—an extraordinary occurence so far north.

The squash bug seems to be more numerous than usual in Minnesota and Iowa.

Larvae of the spotted cucumber beetles have injured immature peanut pods in Virginia.

The tobacco worm continued its depradations late into the fall, being specially destructive in Connecticut.

The late season has been very favorable for boll weevil development. Many more weevils than have been found for several years are reported from South Carolina, Georgia, Florida, Mississippi, Louisiana and eastern Texas. They have continued to develop in the late growth of cotton squares and young bolls produced by recent abundant rains.

PALESTINE GROWERS STUDY STEM END ROT

(Continued from page 7)

of a clamp attached to a stand. Touching the stem-end of the fruit to the tip of the pipette brings out a drop of solution which covers the stem-end. This method permits rapid working and leaves one hand free. The treatment is attended to before packing in the usual paper wrappers.

ORANGE PANOCHE CANDY

4 cups brown sugar, 1 tablespoon butter, 1 cup orange juice, 2 tablespoons vanilla, 2 cups chopped pecans, ½ teaspoon salt.

Boil together sugar, salt, orange juice and butter until when dropped into cold water from a spoon, the liquid becomes hard. When done, pour in vanilla and pecans. Stir constantly until well mixed. Pour on buttered plates and cut into squares.

IMPRESSIONS

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ed, to us, distinctly bad. There were a lot of people there, and with the exception of Gilliam McClure, mayor of Apopka, and ourself, every other man jack in the place seemed to be either a fertilizer or insecticide man or a lawyer. And for chronic appetites, with continuing relapses, fertilizer and insecticide men are notorious, while personally we have never met a lawyer who wasn't hungry right at that moment. There was one stranger there we coudn't place, but he looked hungry too. It just didn't seem reasonable to believe there could be enough food in the world to satisfy that particular gathering.

It developed shortly that this was a sort of jubliation and fellowship gathering to celebrate Nitrate Agencies taking over the sale of the Florida Insecticide Co.'s products. These hungry look personalities were, of course, the personnel of the two organizations concerned, And, of course, they were shepherded respectively by Walter H. Klee and Bill Goding, chronically two of the world's hungriest men. It turned out that we had been invited in our official capacity as chairman of the board of the United States Fireworks and Straw Hat Co., in order to inject an element of dignity into an otherwise unpromising gathering.

We got some comfort from considering Bob Simms of Nitrate Agencies and Tom Wheaton of Florida Insecticide Co., formerly of Stauffer Chemical Co., believing they might show some restraint at the table; but on closer inspection the stranger, who turned out to be named Putnam and likewise of the fertilizer persuasion in as much as he peddles materials to the manufacturers, looked mighty hungry to us.

Well, like a lot of other fears, our apprehensions concerning a possible food shortage were needless. Such grub! And the abundance thereof. It might be called a turkey dinner, but from zoop to knutz it deserved a degree of praise that mere designation as a turkey dinner would not convey. When finally we had worked down to some real Roquefort and mince pie, A. W. (Tex) Haygood was overcome. With deplorable lack of forethought he had omitted to leave room for the mince pie. He simply couldn't eat it; but he put it before him and sat looking at it with his soul in his eyes. Tactfully we turned our back, so he could put it in his pocket. At any rate when we later looked around it was gone.

Hugh Akerman of Orlando, who in recent years has developed into being a sort of citrus lawyer, representing several important citrus and allied interests, was there, of course, possibly having heard there were to be free eats. He brought along his younger brother Bill, he being hungry too. Four days later we met Bill, and he said: "Do you know that was the best meal ever I ate in my life." An honest confession gathers no moss.

Now, of course, Hugh Akerman was called upon to talk. He would have talked anyway; and it was nicer to have him do it by invitation. Equally of course, he dragged in Cartersville, Georgia. He comes from Cartersville, Georgia, and not only admits it but seems proud of the fact. In this instance he dwelt upon it to an extent that actually was unseemly; and the more he took credit for being born in Cartersville, Georgia, the more he seemed to swell with pride until he was pretty well puffed up.

Then a guy told a story. Of course, it was pure coincidence, but it seemed to have some significance in view of what had preceded. He told how two fellows had been out shooting farm animals for Henry Wallace in his vegetarian program, and how, at Clayton, Georgia, they encountered their first goats. Being city slickers from Chicago, they didn't know what goats were until the farmer told them. Then they were uncertain whether they were to shoot goats or not, so they wired Washington for instructions. The fellow on the desk there, being a native of the Bronx, didn't know what goats were either, so he telegraphed them to wire description. They answered to the effect that goats had long narrow faces, scraggly beards, rather thin legs, and smelled to high heaven. A wire came right back: "Don't shoot those, they are Georgia crackers."

Of course, Walter Klee talked, and said a lot of nice things about Bill Goding and the Florida Insecticide Co. He could hardly have done otherwise in view of that wonderful meal. And, naturally, it was necessary to allow Bill Goding to talk and say a lot of nice things about Walter Klee and Nitrate Agencies.

He had done enough for us to entitle him to some privileges. But the boy orator of the evening, when called upon most unexpectedly, turned out to be M. L. (Deacon) Lee, who has been plant manager of the Florida Insecticide Co., since Hector was a very small dog, back in 1916. He sold the bitters. You know how it is, the old darky does a tap dance, the quartette sings, and the Indian chief does some entertaining magic; and then the guy steps forward, calls for silence, and sells the bitters.

There were various and sundry other performers, and a perfectly lovely time was had by all. In the language of the country newspaper, "combining business with pleasure." Personally we had nothing to complain about. In fact we seemed to obtain an unusual degree of personal service. Toward the close, as we were being buttled very assiduously by Charley, Richard Whitney's factotum at the Lodge, we remarked upon the quality and plenitude of the food. He agreed: "Yes Meester Goding say you do not talk so much when you eat the food."

On the main drag in the business center of DeLand, a small log lying in the street and a long line of slowly moving cars veering to avoid it. Until a little guy jerks his door open, pops out, and loads it into the back of his car. It's a poor piece of wood that won't fit someone's fireplace.

And now Jack Whidden has passed. Heart trouble at the age of forty. A bit premature in his candidacy for Commissioner of Agriculture, but the Arcadia man had accumulated a lot of friends over the peninsula in the course of his years of experience in the fruit business.

And Charley McLennan of the Florida Grower also has passed from among us, and suddenly. A fine fellow, and a brave one. Only a few intimates knew the true state of his health this past few years, his appearance giving no indication. The biographical sketch published in The Grower may have indicated to some that he was a rolling stone that had rolled exceedingly. In explanation, he was the son of a noted Methodist minister of his day, whose tenure of residence in places was limited by his calling.

A meeting with Marvin H. Walker, secretary of the Florida Citrus Commission, whose resignation pends at this writing. A sort of Packard personality. Improved, of course, but not much change in the general lines of his chassis since the days when he was a cub reporter upon the old Tampa Tribune.

Our personal idea of the easiest city in Florida in which to drive safely and expeditiously, Jacksonville. The most difficult, Orlando.

Henry Hudson, county agent of Gadsden county, and Henry Hudson, published of the Titusville Star-Advocate are quite different people.

And Lou Detwiler of Winter Park and M. J. Daetwyler of Orlando should never be confused, though they often are. The spelling of the latter's name is imported direct from Holland.

Must we, all our life, be a sucker for bakery window displays?

COPPER — A TRACE ELEMENT

(Continued from page 14)

the Everglades Experiment Station at Belle Glade regarding the use of copper in the early development of organic soils.

Any discussion of copper as a trace element would be entirely incomplete without reference to its role in the metabolism of both man and beast, where a deficiency diet in terms of this element soon becomes apparent in the form of anemia and related diseases. Much progress has been made in the handling of these diseases by our Home Economics and Animal Husbandry Departments, though much remains to be done in the balancing of plant composition from the standpoint of human and animal nutrition. For if the improvement of type and composition of both animals and plants is not for the greater health and happiness of man then what purpose can it have? The facts of the matter are as our agriculture becomes more and more intensive and our soils more and more cropped out in terms of their natural content of these trace elements, the more we shall have to guard against deficiencies of such elements as copper not only in the promotion of normal development in our plants and our animals that feed on them but in the protection of the health of man, as well, who dines not alone on either but upon them both. This, of course, is not meant to refer exclusively to Florida soils and Florida conditions. It is rapidly becoming a nation-wide problem. Thus, in our thinking and in our planning of work in the agricultural field we are unavoidably driven to a certain definite progression of major physical elements, of that field, namely, the Soil, the plant, the Animal and MAN.

FLORIDA FARMERS GET LARGER INCOME DURING 1937, REPORT DECLARES

Receipts by Florida farmers from the sale of farm crops and from government payments were considerably larger during the first nine months of 1937 than for the same period a year earlier, it is revealed in a report by the United States Department of Agriculture received by the Florida Extension Service. Higher receipts from tobacco, citrus fruits, truck crops and most livestock products accounted for the gains, it is said.

From January through September of this year governmental payments to Florida farmers amounted to $1,116,000, as compared with $441,000 a year earlier, the report shows. Total receipts, including government payments and the sale of farm crops for the nine months were $98,353,000.